

CURRICULUM

Q

181.5  
A3242  
1959

ALTA  
500  
1959  
Gr10-11

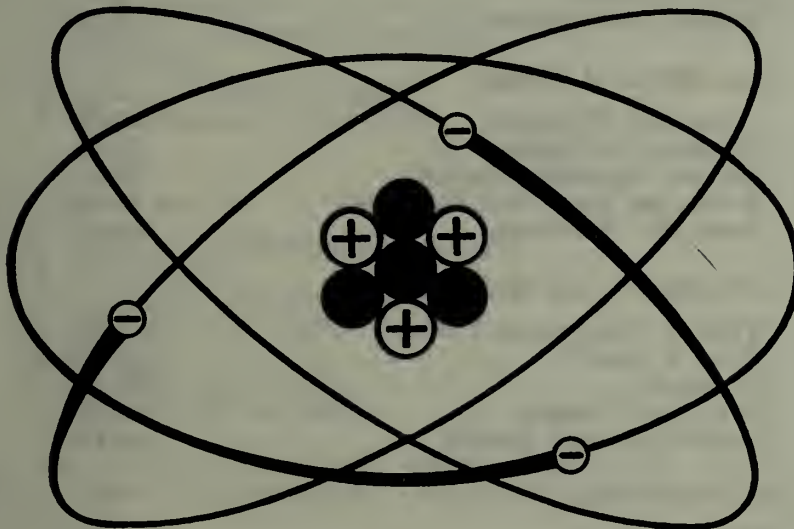
CURRGDHT

CURR





COURSE OUTLINES  
FOR  
SCIENCE 10 and SCIENCE 20  
1959-60



JUNE 1959

## SCIENCE 10 AND SCIENCE 20

This outline will replace the one published a year ago entitled "Course Outlines for Science 10 and Science 20". It is to be used for the school year 1959-60.

### SCIENCE 10

Following are suggestions with respect to course content for Science 10 for the school year 1959-60. The prescribed text for Grade X is *Physical Sciences for Canadian High Schools*. As this text does not contain sufficient chemistry to handle this course it is recommended that use be made of the Grade XII chemistry text, *Chemistry for Secondary Schools*, Advanced Edition. For your convenience page references are given to these two texts. Students in Grade X will be expected to purchase the Grade X text but not the Grade XII text. It is recommended that the teacher have a copy of the Grade XII chemistry text for handy reference. (Experimental work in this course should receive emphasis.)

Students should be able to master a minimum of 25 equations based on material covered in the course and found in the pages listed in the texts *Physical Sciences for Canadian High Schools* or *Chemistry for Secondary Schools*.

The presentation of the topic of valence should be approached from the structure of the atom which will give valence its true meaning.

Exercises at the end of each chapter in *Physical Sciences for Canadian High Schools* should be supplemented.

		Physical Sciences for Canadian High Schools	Chemistry for Secondary Schools
INTRODUCTION.	Science and Human Achievement.		
Chapters	1. Early Progress	3-7	3-8
	2. Modern Developments	8-15	
UNIT 1.	The Nature of Things		
Chapters	3. Atoms and Molecules	19-24	132-137
	4. Molecules in Motion	25-31	
	5. Air, an Important Mixture	32-41	33-41
	6. Water, an Important Compound	42-53	56-70
	7. Water for Machines	54-66	
UNIT 3.	Temperature and Heat		
Chapters	13. What is Temperature?	119-125	
	14. What is Heat?	126-132	
	15. Expansion	133-139	
	16. How Heat Travels	140-148	
	17. Evaporation and Boiling	149-157	
UNIT 5.	Fire and Fuels		
Chapters	22. What is Fire?	197-204	
	23. Oxidation	205-212	20-32
	24. Fires and Explosions	213-222	
UNIT 7.	Electricity		
Chapters	35. What is Electricity?	319-325	
	36. Electric Currents	326-334	

		Physical Sciences for Canadian High Schools	Chemistry for Secondary Schools
UNIT 9.	Communication		
Chapters 44.	What is Sound?	403-408	
45.	Sound Instruments	409-412	
46.	The Telegraph and Telephone (as far as but not including Vacuum Tubes)	413-415	
UNIT 11.	The Chemical Nature of Things		
Chapters 53.	Chemical Activity	469-474	17, 45, 81, 83, 106, 156-162
54.	The Shorthand of Chemistry	476-482	117-128, 129-130 132-137
55.	What are Ions?	483-490	153-155

## SCIENCE 20

The following outline is intended for use in all schools during 1959-60.

The texts for the Chemistry-Physics course (Science 20) are as follows:

1. *Basic Physics* (Alberta Edition): Eubank, Ramsay, Rickard.
2. *Chemistry for Secondary Schools*, Advanced Edition: Croal, et al.  
(Laboratory experiences should be provided: *Experiments in Laboratory Chemistry*: Couke, Croal, Loudon (Copp Clarke) Teacher's Reference.)

All students should be requested to buy these two texts.

### A. PHYSICS SECTION (*Basic Physics* (Alberta Edition): Eubank, Ramsay, Rickard)

#### 1. Mechanics

Suggested time—2 months.

- Chapters
1. Introduction
  2. Measurement
  3. Density and Specific Gravity
  4. Buoyancy
  5. Force, Work and Power
  6. Experiments on Mechanics

#### 2. Light

Suggested time—2 months.

- Chapters
7. Nature and Propagation of Light
  8. Photometry
  9. Reflection of Light—Mirrors
  10. Refraction of Light—Lenses
  11. Colour
  12. Optical Instruments
  13. Experiments on Light

Experimental work is to be considered an integral part of the course. Students should spend at least one day a week in the laboratory. All problems at the end of each chapter should be done by the students.

### B. CHEMISTRY SECTION

Suggested time—4 months.

*Note concerning laboratory work:* Some teachers have found difficulty in supplying laboratory exercises to cover the chemistry of Science 20. Source material for demonstrations as well as class experiments in this section of the work may be found in *Experiments in Laboratory Chemistry* by Croal, Couke and Loudon, published by Copp Clarke, Toronto. The cost of this text is about \$2.00.



**1. Solutions: Terms describing Solutions****2. Chemical Classification:**

Law of Conservation of Mass	81
Law of Definite Proportion	83
Law of Constant Composition	84
Classification Table	85
Summary of Mixtures, Solutions, Compounds	87

**3. The Gas Laws:**

Reason for Pressure	89
Standard Normal Pressure	91
Boyle's Law	91
Determining the coefficient of expansion of a gas	92
Absolute Temperature	95
Charles' Law	96
Standard Temperature	97
Combination of Boyle's and Charles' Laws	—
(Pupils should have an understanding of how the two laws work together.)	

**4. Laws and Theories**

Rather than a formal presentation of this chapter as a unit it is intended that the information will be introduced as required by the class. Chap. 11

**5. Symbols, Formulae and Equations**

117-124

**6. Valence**

As an introduction to the formal presentation of the topic of valence it is suggested that the structure of the atom be presented to the class. Once this is mastered the matter of valence takes on its true meaning. It is also suggested that the stress be on electrovalence only and that the problem of covalence be left until Chemistry 30 except for a reference to the formation of gas molecules such as  $H_2$ ,  $O_2$ , etc.

Valence and the electron theory	132-137
Meaning of valence	129
Elements with several valences	130
Table of valences	130
Using valence	130

**7. Naming of Compounds**

139-146

NOTE: It has been found that students who understand this chapter grasp more readily the rest of the high school chemistry and will build rather than memorize formulae and equations.

Students should do all the exercises 1-26, pages 144-146.

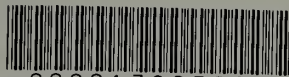
**8. Using Equations:**

Calculating relative weights	147
Solving weight—Weight problems	148
Solving weight—Volume problems	148
Solving volume—Volume problems	149

NOTE: Those schools that followed the Experimental Course in Science 10 last year will have done considerable work in valence in Science 10. This will be reviewed this year and other work may be added to this year's Science 20. In the experimental course Hydrogen and Nitrogen was omitted in Science 10 (Hydrogen pages 42-50 and Nitrogen pages 35-38). This may be added to the Science 20 course. If time permits Chapter 25 of the text Calcium and Magnesium, page 259, may also be added to the Science 20 course.

Suggested time for further expansion of topics, review, examination, etc.—2 months.

Q 181-5 A3242 1959  
ALBERTA DEPT OF EDUCATION  
COURSE OUTLINES FOR SCIENCE 10  
AND SCIENCE 20 --  
39838181 CURR HIST



\*000017635863\*

Q 181.5 A3242 1959  
Alberta. Dept. of Education.  
Course outlines for science 10  
and science 20. -  
39838181 CURR HIST

CURRICULUM GUIDE

**For Reference**

NOT TO BE TAKEN FROM THIS ROOM  
EXCEPT WITH LIBRARIAN'S PERMISSION

